Operating Instructions
OS3 Base unit, VC830100

VV016011E

Phaco Emulsification System

CE

0297

Contents

		Page
1	Application and description	3
2	Points to note and hazards	3
3	Control panel	4
3.1	Arrangement of control and indicator elements	4
4	Control pedal	6
5	Mains connection / switching the unit on/off	8
5.1	Replacing fuses	8
6	Setting up the I/A system	8
6.1	Installing the cassette	9
6.2	Filling the I/A system (PREOP)	10
6.3	Removing and cleaning the cassette	10
6.3.1	Cassettes for single use (Fig. 3,4)	10
6.3.2	Autoclavable cassette fig. 5 (the instructions on the accompanying packaging insert are binding)	10
7	Attaching the operating instruments	11
7.1	Suction/rinsing instrument	11
7.2	Ultrasonic phaco handpiece	11
7.3	Diathermy instruments	12
8	Operating the unit	12
8.1	Storing values (multimode memory)	12
8.2	I/A	13
8.2.1	I/A operation	13
8.2.2	Changing between venturi/peristaltic operation	13
8.2.3	Infusion pressure IOP	13
8.2.4	Continuous irrigation	14
8.2.5	Reflux	14
8.2.6	Proportional Override	14
8.3	Ultrasonic phaco	14
8.3.1	Phaco test	14
8.3.2	Phaco operation	14
8.3.3	Phaco pulse and phaco burst	15
8.3.4	CMP Phaco	15
8.3.5	Occlusion Mode Phaco	15
8.3.6	Proportional override for Phaco	15
8.3.7	Setting of values for additional aspiration and phaco-power in DUALLINEAR 2 mode	16
8.4	Diathermy	16
8.5	HF CUT	16
8.5.1	Capsulotomy	16
8.5.2	Glaucoma	16
8.6	Vitrectomy	17
9	System communication	17
9.1	Visual displays	17
9.2	Acoustic signals	17
9.3	Voice confirmation	17
10	Pre-settings using ParaProg	18
11	Selection of setting values	18
12	Cleaning and sterilisation regulations	19
12.1	Cleaning the Control Device	19
12.2	Cleaning the Instruments	19
12.3	Sterilisation	19
13	Accessories and replacement parts	19
14	Authorised service centres	19
15	Technical data	20
16	Overview of messages, warnings and error messages	21
17	Symbols	22
18	Calibration and maintenance	22
19	Disposal	22
20	OS3 Base Unit, VC830100, Overview	23

1 Application and description

The OS3 operating unit is used in surgical procedures to the anterior and posterior segments of the eye. It performs all essential functions including irrigation and aspiration, ultrasound Phaco, bipolar diathermy for haemostasis and coaptation of conjunctiva, diathermic capsulotomy, diathermic tissue cutting and the drive of vitrectomy instruments. The unit can be supplemented with the VC830200 module for carrying out vitreo-retinal procedures.

The unit actuates and controls companion instrumentation within the performance limits chosen by the operator and as set on the control panel. A foot pedal effects fine adjustments within the pre-set limits. The unit is extremely easy to use. Frequently used equipment settings can be stored and recalled.

The unit may only be used with the Oertli instruments recommended and supplied by the manufacturer (see Section 13).

The unit may only be operated by trained personal. Correct settings are the responsibility of the surgeon.

The unit is not suitable for surgical procedures outside the eye. If in doubt, contact the manufacturer.

2 Points to note and hazards

IMPORTANT

Please read these instructions very carefully before using the apparatus for the first time!

IMPORTANT!

Before connecting the unit, check that the voltage shown on the rating plate is the same as that of the operating room!

IMPORTANT!

1. Patients with heart pacemakers or pacemaker electrodes may be at risk in that the functioning of the pacemaker may be impaired or the pacemaker itself damaged. If in doubt, the cardiology department must be consulted.

2. The functioning of other electro-medical equipment may be affected during the operation of bipolar diathermy, capsulotomy and vitrectomy cutters.

IMPORTANT!

Where high-frequency diathermy, HF-cut or vitreous cutting is used simultaneously with physiological monitoring equipment on the same patient, any monitoring electrodes must be placed as far as possible from the diathermy points. Needle monitoring electrodes are not recommended. Monitoring systems incorporating high-frequency current limiting devices are recommended in all cases.

IMPORTANT!

The correct choice of instrument settings is the responsibility of the surgeon! Values given in this instruction manual are suggestions only.

IMPORTANT!

Only instruments and accessories supplied by the manufacturer and listed in Section 13 may be used!

IMPORTANT!

Only persons authorised by the manufacturer may carry out modifications and repairs, otherwise the proper functioning of the unit may be impaired.

IMPORTANT!

While operating in diathermy or HF-cut mode, the instrument tip must be monitored carefully. The pedal must be released immediately as soon as tissue begins to overheat excessively.

IMPORTANT!

All accessories must be checked regularly! Diathermy cables in particular should be checked for possible damage to the insulation.

IMPORTANT!

The unit must never be used in areas containing inflammable anaesthetics!

IMPORTANT!

The cart with the tray fully stretched out can tip over if inclined more than 6°! The cart must only be moved when the tray is fully folded and stored.

IMPORTANT!

The operator is responsible for compliance with EN ISO 60601-1:2007.

3 Control panel

All settings for the operation of the OS3 operating unit can be undertaken using the control panel (pre-settings are made using ParaProg. See Section 10). Visual displays serve to show the current operating state of the unit and the current values. The buttons respond to light pressure, which can also be applied using a sterile swab or the special sterile operating pen (VE850003) available from the manufacturer.

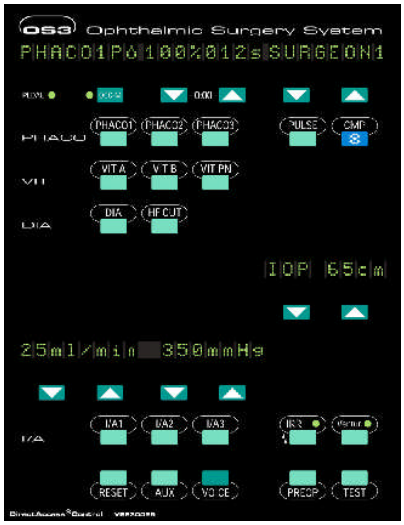
Depending on the stage of the operation or the setting of the operating pedal, certain buttons will be blocked. This feature offers increased protection against improper use.

The execution of a button command is accompanied by corresponding changes in the display field. There is no change in the display when a blocked button is pressed.

The control panel can be separated from the unit and placed in a sterile bag for use in the sterile area. To do so, lift and disengage the control panel from below. Alternatively, an additional control panel VE 830025 or a remote controller VE 830020 can be connected to socket M3.

3.1 Arrangement of control and indicator elements

Displays and settings for operation functions



Displays and settings I/A system

Auxiliary functions

The controls and displays are grouped in such a way that the unit can be operated after just a short familia- rization period, even in semi-darkness. The top half of the control panel is the display and adjustment area for the phaco, vitrectomy, diathermy and capsulotomy functions. It shows at a glance the operating state of the unit and the current values. The values displayed can be increased or decreased using the dark green arrow buttons immediately beneath the display.

The lower half of the control panel houses the displays and adjustment buttons for the irrigation/aspiration system.
The lowest row on the control panel contains all the buttons for the auxiliary functions.

Please familiarise yourself thoroughly with this ergonomic arrangement of the control elements; it will quickly enable you to operate the unit almost "blind"!

The display and adjustment area

Function display Value display Surgeon display

The function display
Shows which function has been selected and is active. The display matches the symbol on the function button last pressed. Any auxiliary functions selected are also indicated: PULS by a P, Burst by a B, CMP by CMP and IRR by a falling droplet.

The value display
Shows the limit value selected for the instrument being used (or the current value when the pedal is depressed).

Diathermy:	Power in %
HF CUT:	GLAUCOMA or CAPSULE (no indication of power as automatic controlled)
Vitrectomy:	Number of cuts per minute
Phaco:	Power in % and elapsed ultrasound time (relative to power)

The surgeon display
Shows the number of the selected surgeon memory or name of the surgeon.

Arrow buttons
The arrow buttons can be used to reduce (down arrow) or increase (up arrow) the value display in the panel immediately above. Press normally to change the values slowly or in single steps, and depress fully to change the values quickly.

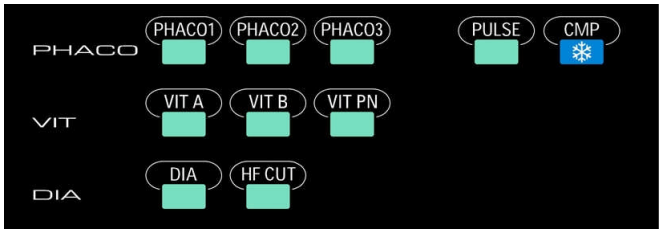
0:00 button
If the two arrow buttons are pressed simultaneously, ultrasound time is reset to 0.

PEDAL light indicator
Lights up green when the pedal is active. Certain control elements are then blocked for safety reasons.

OCC-M button and light indicator
The OCC-M function is switched on and off by light pressure to the button. Pressing the button more forcibly prepares the OCC-M memory for programming (see 8.3.4).

Light indicator on:	OCC-M function ready
Slow flashing:	OCC-M memory ready for programming
Rapid flashing:	OCC-M function active

Function selection area



DIA button
Sets the unit to DIATHERMY function at the output last selected.

HF CUT button
Sets the unit to the CAPSULE (capsulotomy) or GLAUCOMA (as last selected) function with automatic output control.

VIT A button
Sets the unit to VITRECTOMY function, to operate the vitrectomy instruments connected to the VIT A port and using the values selected for cut rate, flow and suction.

VIT B button
Sets the unit to VITRECTOMY function, to operate the vitrectomy instruments connected to the VIT B port and using the values selected for cut rate, flow and suction.

VIT PN button
Sets the unit to VITRECTOMY function, to operate the vitrectomy instruments connected to the VIT PN port and using the values selected for cut rate, flow and suction.

PHACO1 button
Sets the unit to ultrasonic phaco or CMP (as last selected) function, Program 1, with the values stored in this program.

PHACO2 button
Sets the unit to ultrasonic phaco or CMP (as last selected) function, Program 2, with the values stored in this program.

PHACO3 button
Sets the unit to ultrasonic phaco function or CMP (as last selected), Program 3, with the values stored in this program.

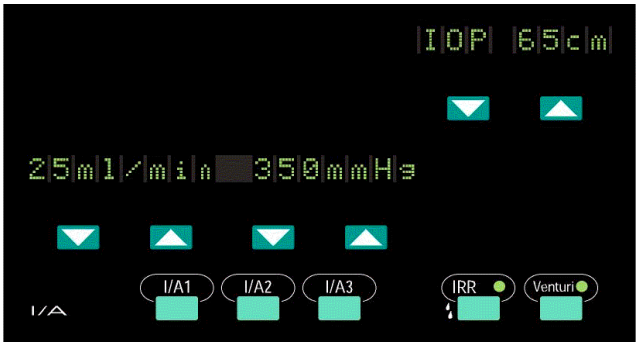
CMP button
Switches on CMP operation (for phaco 1, 2, 3) and switches it off when the CMP button is pressed again. If the button is held down, CMP frequency and cooling factor can be changed (see 8.3.4).

PULSE button
Switches on pulse or burst operation (for phaco 1, 2, 3) and switches it off when the button is pressed again. If the button is held down, the pulse or burst parameters can be changed (see 8.3.3).

In ParaProg you can specify per surgeon whether Pulse or burst or pulse and burst shall be available.

I/A system

Flow indicator | Suction-(vacuum) indicator | IOP indicator



Flow indicator
In peristaltic mode, this shows the maximum set aspiration flow rate (or the current rate if the pedal is depressed). In venturi operation, it indicates the set venturi speed (100% = immediate creation of vacuum), also called the venturi effect.

Suction (vacuum) indicator
Shows the set limit value for suction (vacuum). The current value is shown if the pedal is depressed.

IOP indicator
Shows the current bottle height in cm. If used in conjunction with Vitrex module VC830200, the air pump pressure (AIR function) can also be indicated here. Press the IOP button on the Vitrex unit to do this.

I/A1 button
Sets the unit to irrigation/aspiration function, Program 1, with the respective stored values for flow rate (or venturi speed) and suction.

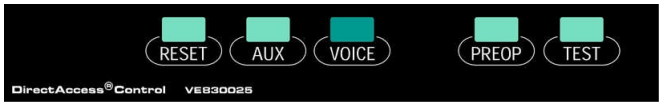
I/A2 button
Sets the unit to irrigation/aspiration function, Program 2, with the respective stored values for flow rate (or venturi speed) and suction.

I/A3 button
Sets the unit to irrigation/aspiration function, Program 3, with the respective stored values for flow rate (or venturi speed) and suction.

IRR button and light indicator
Switches on the continuous irrigation function, and switches it off if pressed again. When the light indicator is illuminated: the IRR function is ready (see 8.2.4). If the button is held down, the irrigation valve remains open.

Venturi button and light indicator
Switches between the peristaltic and venturi pump. When the light indicator is illuminated: the venturi pump is ready (see 8.2.2).

Auxiliary functions



RESET button
Can be pressed at any time, and brings the unit to an immediate stop. Ultrasound time is reset to zero. Reset of the Ultrasound time also after installation of the cassette.
The RESET button restarts the internal processor and is thus an escape button in a situation where, for some reason, normal operation is no longer possible.

AUX button
Used (button held down) to adjust the volume of acoustic signals (SOUND) and voice messages (VOICE). Also adjusts the IOP indicator (bottle height).

VOICE button
Repeats or stops the current voice message. The scope of information given can be defined in ParaProg.

PREOP button
Initiates the filling and rinsing function, and stops the procedure if pressed again. Completes the procedure with a phaco test if PREOP is started when in phaco 1, 2, 3 operating mode.

TEST button
Starts the phaco test when the unit is set to phaco 1, 2 or 3, or activates the connected vitrectomy instrument during button depression, if the unit is in VIT A, VIT B or VIT PN mode.

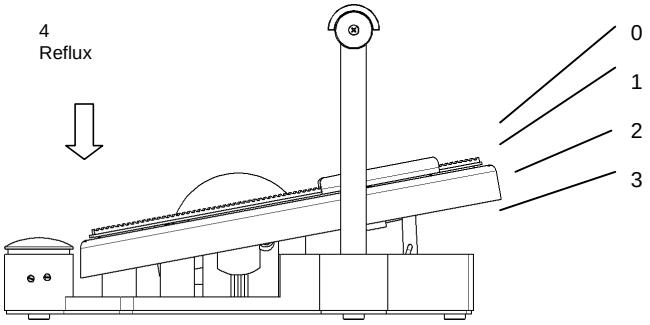
NOTE: If not willingly activated PREOP or Phacotest also can be interrupted by pressing pedal with the heel. Then the display shows the message “PREOP discontinued” or “Phaco Test discontinued”.

4 Control pedal

The control panel is used to regulate the I/A system and all instruments. It must be connected to the pedal connection socket (M1) on the rear of the unit. The control pedal can be moved vertically (downwards) and
horizontally (sideways) and has four switching elements, which, for safety reasons, can only be accessed by lifting the foot.

The vertical plane

Fig. 1



The vertical range – from zero to the fully depressed position – is divided into a maximum of three ranges: irrigation, aspiration and instrument activation. These three ranges lie between positions 0, 1, 2 and 3. If the pedal is pressed slowly, the settings 0-3 can be felt as a slight resistance. This resistance can be changed in ParaProg (low, medium, high).

The pedal is brought to position 4 by pressing with the heel, and this position is always used to activate reflux.

The number of positions and the amount of travel between them can be changed in ParaProg. This is described in detail in the ParaProg user manual, VV016013E.

The vacuum is always off in position 0.There is no suction, and the instruments are inactive.

The service engineer can adjust the firmness of the pedal (resistance to movement).

The horizontal plane
In the horizontal plane, the pedal can be moved to the left and right. The pedal can be moved horizontally from any of the vertical positions, i.e. even when the pedal is depressed.

If duallinear operation is selected in ParaProg (see Section 10), the chosen instrument is **controlled linearly by moving the pedal to the left** (i.e. the power of the instrument changes in proportion to the deflection).

Moving the pedal to the right switches between the multimode memories of the function just used (e.g. phaco 1-2-3 etc.).
ParaProg (see Section 10) can be used to specify whether 2 or 3 memories should be available.

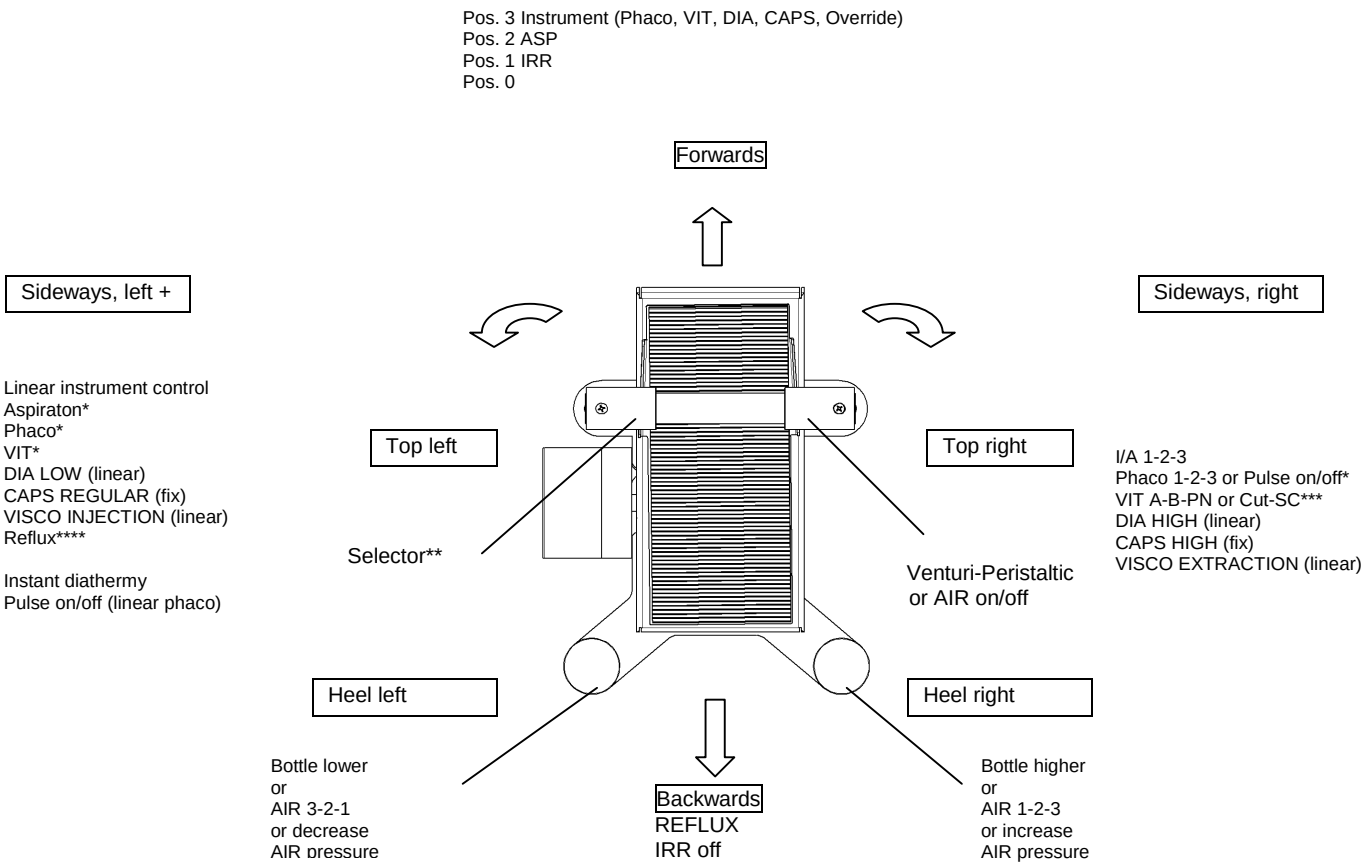
In ParaProg (se Section 10) you can invert the assignments of left and right of the horizontal movement to right and left.

Switching elements
The two round switches (heel switches) can be operated with the heel (the pedal does not have to be in the zero position) to change the infusion pressure (bottle height) or air pump pressure. Pressure is always reduced with the left heel switch, and increased with the right heel switch.

The two switches on the pedal grip (TOP switch) are positioned so that they can only be activated after the pedal has been returned to the zero position (foot raised).

TOP left
Switches between the basic functions (selector) e.g. I/A, CAPS, Phaco, etc. Each surgeon can enter his preferred sequence in ParaProg.

Fig. 2
Overview of the pedal controls



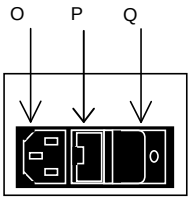
* Only when 'duallinear' has been selected in ParaProg
** Allows you to change between the basic functions
*** Single cut or scissors close
**** Only when selected in ParaProg
\+ Unless left and right are inverted in ParaProg (INVERT)

TOP right
Switches between the venturi and peristaltic pump. Alternatively, in ParaProg this switch can also be set to switch the air pump on/off.

NOTE: If the Venturi cassette VV635010 is being used, the right TOP switch is automatically set to air pump AIR

5 Mains connection / switching the unit on/off

IMPORTANT!
The mains voltage in the operating area must be 100...240VAC / 50...60Hz!



Plug the supplied mains cable into the mains connection socket O on the back of the unit, and connect to the mains supply socket.

Move the power switch Q to position I.

As soon as it is switched on, the unit starts a self test (AUTOTEST), and checks the functioning of the switching circuits, voltages, tone generation, instrument drives and pump.

If the pedal is not connected, the message "NO PEDAL" appears.

When the test has been completed successfully, the message "SELECT SURGEON" is displayed.

The selected surgeon memory appears in the surgeon display. It can be changed by using the arrow buttons.

In the flow display, the version of the installed software appears in weakly illuminated lettering.

The unit is now ready and can be prepared for the operation.

5.1 Replacing fuses

Press the clip on fuse holder P to the right, until it pops out. Use a small screw driver as desired. Fully pull out holder. Insert new fuses and push in the holder P again.

The correct fuse value is printed above the holder P on the rear panel of the unit.

6 Setting up the I/A system

With the exception of diathermy and capsulotomy, a properly set up and filled irrigation/aspiration system is essential for all operations.

IMPORTANT!

To ensure trouble-free operation, the I/A system must be completely filled with irrigation fluid. The tubes must be completely free of air bubbles!

The OS3 unit cassette system simplifies the proper set-up of the I/A unit. Three different designs are available.

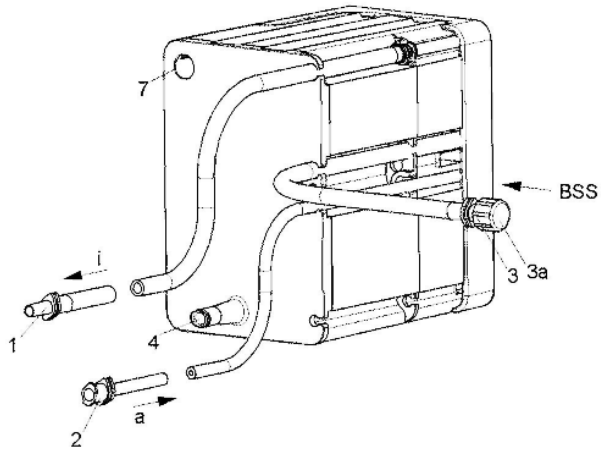


Fig. 3 VV630010 Single use
VV630011A Single use Phaco Pack

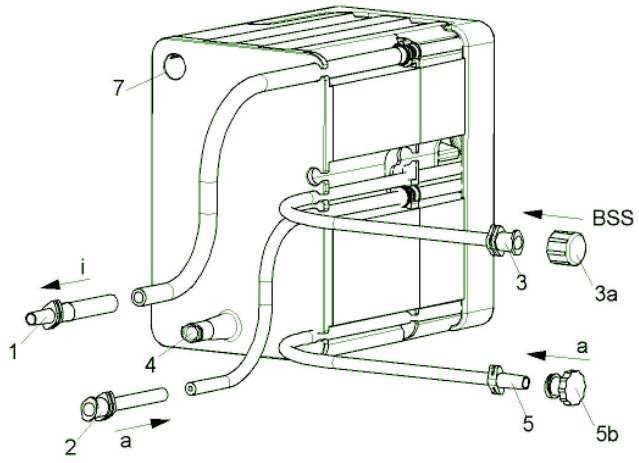


Fig. 4 VV635010 Single use; venturi only; with second aspiration connection.

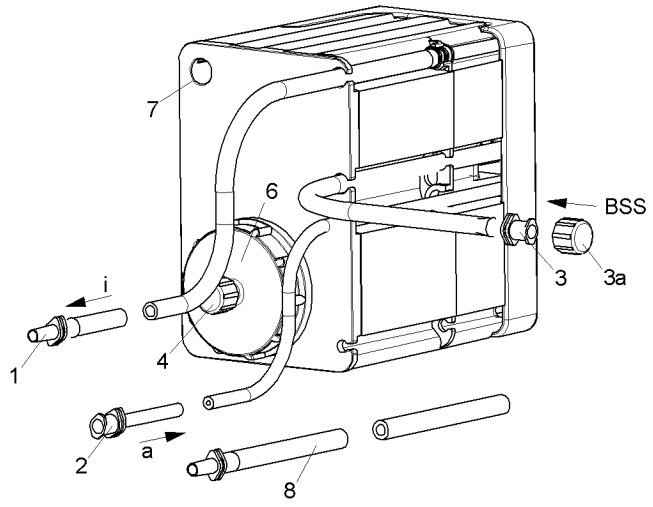


Fig. 5 VV630003 Autoclavable

1 Infusion connection IRR
2 Aspiration connection ASP1
3 Connection for infusion bottle BSS
3a Protective cap
4 Emergency discharge
5 Aspiration connection ASP2
5b Protective cap
6 Screw cap for discharge
7 Venturi opening
8 Rinsing tube

Autoclavable cassettes must be cleaned and sterilised according to the instructions on the packaging insert. After multiple sterilisation processes, the cassettes and tubes will show signs of ageing which will endanger the proper functioning of the I/A system and may result in damage to the unit due to the ingression of water.

IMPORTANT!

Reusable cassette sets must be replaced after 10 sterilisation cycles!

IMPORTANT!

Single-use cassette sets must never be reused!

IMPORTANT!

Reusable cassettes must be clean and free from remnants of silicone or visco substances, inside and outside, to avoid false alarm of the liquid level indicator.

6.1 Installing the cassette

IMPORTANT!

Ensure that conditions are sterile when installing the tubing system!
The ends of the instrument connection tubes must be kept in the sterile area. The sterile person must not insert the tubes into the unit!

- Turn the cassette rotary switch in an anti-clockwise direction and open the cassette door G1 downwards.

IMPORTANT!

Do not reach into the cassette opening (risk of injury!) Never insert any kind of tool into the cassette opening (risk of damage!)

- Insert the cassette in the cassette opening (with the tubes facing the operator). Lightly bend the tubes to the right with the right hand, and use the left hand to close the cassette door by pushing it upwards. Turn the cassette rotary switch G in a clockwise direction until you hear and feel it engage (horizontal position). The cassette is now fully connected to the pump system.

The tubes must not be kinked nor trapped in the cassette door!

- Remove the protective cap 3a, and mount on emergency discharge 4, then connect BSS connector 3 with the giving set. Ensure sterility.

Note: Alternatively, the giving set can be attached to connector 3 in the sterile area before the cassette is installed.

- Check that cap 4 for emergency discharge and screw cap 6 for emptying the cassette (autoclavable cassette only) are screwed tightly shut.

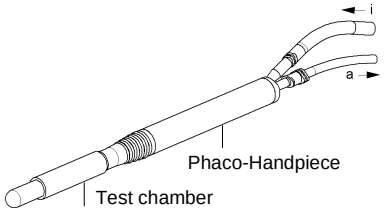
The Ultrasound time will be reset after installation of the cassette.

6.2 Filling the I/A system (PREOP)

To fill the I/A system, the instrument ends of the connection tubes should be prepared as follows in the sterile area, ensuring that sterile conditions are maintained:

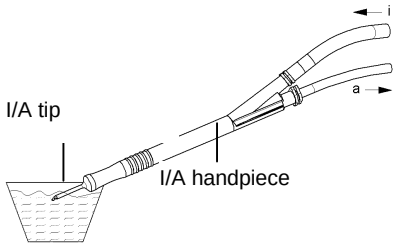
Variant 1

Connect to a phaco handpiece and set up a phaco test chamber (VV803100).
This procedure is described in detail in Section 7.2. "Ultrasonic phaco handpiece".



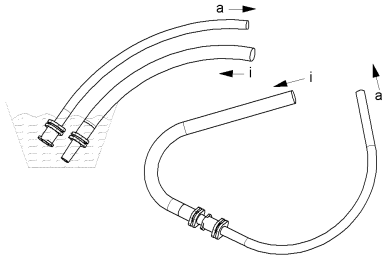
Variant 2

Connect to a I/A instrument and insert the point of the instrument in a container of infusion liquid.
This procedure is described in detail in Section 7.1. "I/A instrument".



Variant 3

Immerse the loose ends in a container of infusion liquid or join together the infusion and aspiration tubes.



Variant 1 is recommended so that a phaco test can also be carried out.

- Prepare the instrument tubes in accordance with one of the above variants.
- Open the infusion tap on the giving set and press the PREOP button.1) The message of "FILL RINSE" will appear in the display and the progress of the filling procedure is indicated in %.
- As soon as the entire tubing system is completely filled with fluid, and no more bubbles are visible, the filling process can be stopped by pressing the PREOP button again. However, the filling process automatically switches itself off approx. 55 seconds.

The I/A and phaco system is now ready to use.

If variant 1 is being used, press PHACO 1, 2 or 3 first, then the PREOP button. The phaco test will then be carried out automatically when the filling process is complete.

NOTE: The PREOP function is divided into two phases: I Filling of the infusion equipment, II Filling of the I/A hoses. Phase I can be skipped by pressing the PREOP button twice.

6.3 Removing and cleaning the cassette

6.3.1 Cassettes for single use (Fig. 3,4)

- Remove the tubes from the instruments and join together connections 1 and 2 (to prevent the liquid from dripping out).
- Close the infusion tap, and detach the giving set from the infusion bottle.
- Turn the cassette rotary switch G in an anticlockwise direction and lower the cassette door G1. Remove the cassette from the slot. Keep it upright so that no liquid escapes from the venturi opening, 7.
- Dispose of the cassette and its contents in accordance with local regulations for the disposal of contaminated medical waste.

6.3.2 Autoclavable cassette fig. 5 (the instructions on the accompanying packaging insert are binding)

- Remove the tubes from the instruments and join together connections 1 and 2.
- Close the infusion tap and detach the giving set from the cassette.
- Plug the rinsing tube 8 onto the BSS connection, 3, and immerse in a container of distilled water. Set the unit to I/A operation and press the PREOP button (rinse).
- When the PREOP cycle has finished, remove the rinsing tube, 8, from the container and press the PREOP button again (suck empty).
- Turn the cassette rotary switch G in an anticlockwise direction and lower the cassette door G1. Remove the cassette from its slot. Keep it upright so that no liquid escapes from the venturi opening, 7.
- Empty the cassette and sterilise it according to the instructions on the accompanying packaging insert for the autoclavable cassette.

NOTE: The procedure can be shortened by pressing the PREOP button twice each time.

NOTE: When MEMOPOLE is set to FUNC or PROG in ParaProg (with storage for rod height activated), the rod automatically moves down when the cassette is extracted. If the cassette is used, the rod automatically moves to the stored rod height of the used function or program.
The rod does not move automatically when MEMOPOLE is set to OFF.

7 Attaching the operating instruments

The operating instruments are connected to the instrument connection ports A, B, C, D, E and F (see section 22) on the front of the unit. The ports are colour coded and mechanically coded, so there is no possibility of connecting the instruments incorrectly.

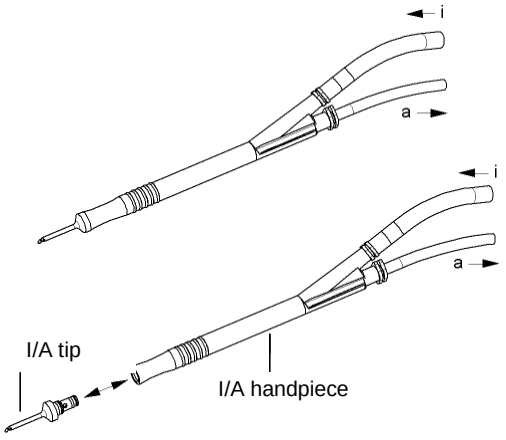
Blue	A	Phaco handpiece connection
Red	B	Diathermy/HF CUT connection
Green	C, D	Connection for electrically-operated vitrectomy instruments
Luer	E, F	Connection for pneumatically-operated vitrectomy instruments. They must be connected in accordance with the instructions on the packaging insert.

- To insert, hold the instrument plug by the sleeve with the coding ridge facing upwards, and plug into the port. The plug auto-locks in position to prevent dislodgement by a pull on the cable.
- To remove, hold the plug by the sleeve and pull out.

7.1 Suction/rinsing instrument

- Plug the irrigation tube (i) and the aspiration tube (a) into the I/A handpiece. The luer connectors are designed so that it is impossible to connect the instruments wrongly.

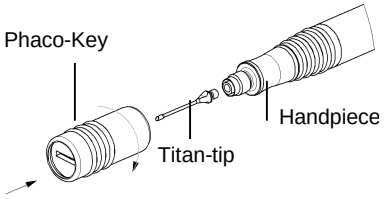
- Attach the chosen tip. Wet the tip with irrigation fluid to ease insertion.



7.2 Ultrasonic phaco handpiece

Reusable tip

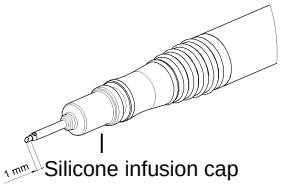
- Screw an "Excellerator 2" titanium tip onto the handpiece using the key supplied. Push the key over the tip as shown in the diagram, and tighten in a clockwise direction using light axial pressure.



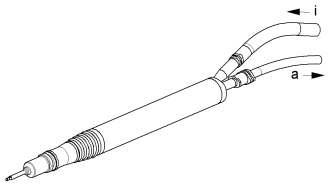
Single use tip

- Screw the tip with the pre-mounted key onto the handpiece. Remove the key and keep it, it will be used again to remove the tip after the procedure.

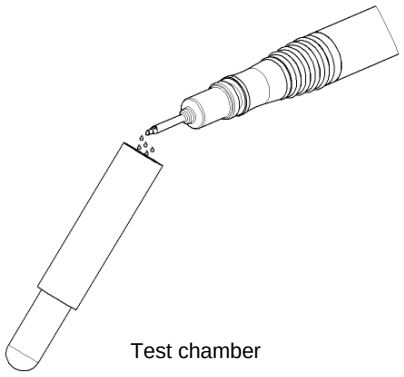
- Screw a silicone infusion cap VV 603200 or VV 603202 onto the handpiece over the tip until the phaco tip protrudes by about 1 mm. Wet the silicone cap with irrigation fluid firstly to simplify attachment.



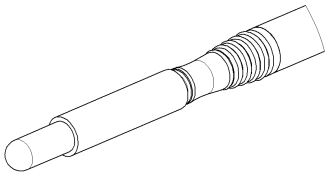
- Plug the irrigation tube (i) and the aspiration tube (a) into the phaco handpiece. The luer connectors are designed so that it is impossible to misconnect the tubes.



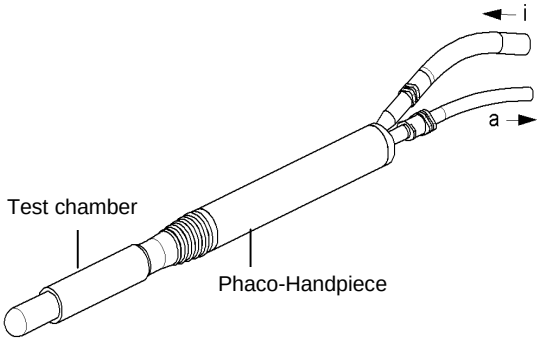
- Fill a test chamber VV803100 with irrigation fluid. Move the foot pedal into position 1 (irrigation) to do this, or keep the IRR button depressed.



- Attach the filled test chamber.
- Plug the blue-coded connection plug of the phaco handpiece into socket A.
- With the test chamber attached, fill the I/A system and the handpiece as described in Section 6.2.

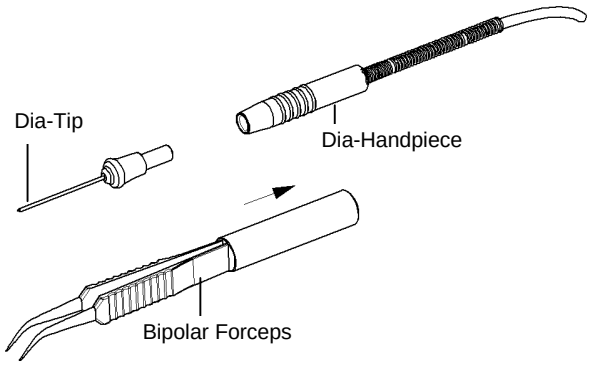


- When filling is complete, and with the test chamber in place, carry out the phaco test as described in Section 8.3.1 if this has not already been carried out automatically.



7.3 Diathermy instruments

- Insert the red-coded plug of the diathermy handpiece into the red connector socket, B.
- Attach the chosen tip (diathermy/capsulotomy/ glaucoma) or the bipolar forceps on to the handpiece until fully engaged.



8 Operating the unit

8.1 Storing values (multimode memory)

Frequently-used values can be stored and recalled for function buttons I/Al, I/A2, I/A3, PHACO1, PHACO2, PHACO3, CMP1, CMP2, CMP3 as well as VIT A, VIT B, and VIT PN (or VIT A1 VIT A2 etc).

Calling up values

Press the above buttons briefly to call up the stored values immediately.

Storing new values

Press the button for the function to be stored and, using the arrow buttons, set the values to be stored. The function “Continuous irrigation” and the pump system can also be stored. Next, press the respective memory button (I/A1, I/A2, PHACO1, VIT A etc.) and hold down for a short period. The message "SETTING VALUES" appears, accompanied by an acoustic signal, and finally the message "VALUES SET". The new values are now stored and can be recalled at any time. If you release the button too soon, the message "VALUES NOT SET" will appear.

* The PULSE or BURST function is not stored if "PULSMODE NO" is set in ParaProg (see chapter 10).

* Continuous irrigation is also stored for each of the functions I/A, PHACO and VIT. Continuous irrigation is not stored for all other functions

Note that values for peristaltic and venturi operation must be stored separately, which also means that different values can be stored.

Section 8.3.4 describes the procedure for storing values for Occlusion Mode Phaco.

Storing of bottle height
If the ParaProg parameter MEMOPOLE was chosen accordingly, the actual bottle height will be memorized too during the storing procedure described above.
OFF Not stored
FUNC Stored per function I/A, PHACO, VIT, DIA*, VISCO*
PROG Stored per multimode program I/A, PHACO, CMP, VIT, DIA*, VISCO*
* if irrigation ON selected

When the I/A system has been filled and the instruments are connected, the unit is ready for the operation.

Storing the pump system (venturi/peristaltic)
If the parameters PUMP IA, PUMP PHACO and PUMP VIT were appropriately set in ParaProg, the current pump system is saved as follows for the storage procedure described above:

NO VENTU	No storing, the pump system is peristaltic and cannot be switched over with the venturi button.
FUNC	Storing for each function I/A, PHACO, VIT.
PROG	Storing for each multimode program I/A, PHACO, VIT.

The setting from PUMP IA is taken for the function VISCO.

8.2 I/A

8.2.1 I/A operation

Press the I/A 1, 2 or 3 button.

The display fields show the selected function together with the active surgeon memory and any relevant limit values stored for flow and suction. Using the arrow buttons, these values can be increased or reduced at any time within the ranges 0 to 50 ml/min (0 to 100%

VENT) or 0 to 600 mmHg. See Section 8.1 for information about storing values.

The irrigation / aspiration procedure is controlled by the surgeon using the pedal. When the pedal is operated, the current values will appear in the display fields.

To exit the I/A function, you can either press a new function button or the RESET button.

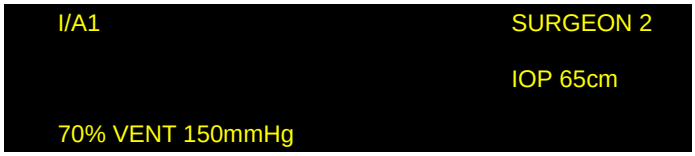
As long as the pedal is being operated (except when in position 1), all the buttons – with the exception of the arrow buttons, I/A 1, I/A 2, IRR, AUX, VOICE and RESET – remain blocked.

8.2.2 Changing between venturi/peristaltic operation

If cassettes VV 630003 or VV 630010 are being used, you can change between the venturi and peristaltic pump at any time. To do so, the pedal must be in the zero position.

Effect the change by pressing the venturi button on the control panel (or remote controller), or the right TOP switch, on the pedal grip.

Venturi operation is shown by the green indicator light next to the venturi button and by the %VENT display.



Note: In ParaProg you can specify per surgeon and per function whether you wish to work with peristaltic only, venturi only, or with both pumps.

8.2.3 Infusion pressure IOP

8.2.3.1 Gravity infusion with bottle height

When using the OS3 infusion trolley VE830001, the height of the infusion bottle can be adjusted with both the heel buttons on the pedal and the arrow buttons beneath the IOP display. The display indicates the height of the bottle above the patient's eye in cm.

Proceed as follows to calibrate the bottle height: measure or estimate the bottle height, hold down the AUX button and enter the measured value using the arrow buttons beneath the IOP display. Release the AUX button.

The maximum bottle height can be defined in ParaProg. To do so, position the bottle at the chosen maximum height, open ParaProg (see Section 10) and answer Fluidics-More-SET POLE LIMIT with YES.

NOTE: In ParaProg you can set surgeon-specifically whether the HEEL buttons on the pedal are activated/deactivated.

8.2.3.2 Active infusion with air pump

When using the Vitrex VC830200 extension module, the air pump can be used to produce pressure in the infusion bottle. Follow the instructions in the leaflet accompanying the active infusion set.

The IOP button must be pressed on the Vitrex module. The IOP display will show the bottle pressure in mmHg, which can be changed using the HEEL buttons and arrow buttons beneath the IOP display.

Note: In ParaProg, individual settings can be made for every surgeon as regards whether bottle pressure should be changed linearly or using the stored values of AIR1, 2, 3 (Vitrex module).

8.2.4 Continuous irrigation

Press the IRR button if irrigation flow is to be maintained independently of the pedal position. An active IRR function is indicated by the falling droplet symbol in the function display. Pressing the IRR button again will switch off the IRR function. Irrigation flow begins as soon as the pedal is moved to position 1 for the first time. It can be stopped by moving the pedal back to position 4.

NOTE: The Parameter „IRR OFF BACKWARDS YES NO“ of the ParaProg disables or enables the function of stopping the continuos irrigation by moving the pedal backward to position 4.

The IRR function can be used in conjunction with all the other functions. If the IRR button is held down, the irrigation valve opens.

8.2.5 Reflux

Reflux (backflushing) is actuated by moving the pedal backward into position 4 (Fig. 2), or if selected in ParaProg by switching to the left. Unless otherwise specified in ParaProg, reflux is effected by the reverse operation of the pump. The Twin Vac cassette is designed to exclude any possibility of contamination. The maximum reflux pressure with the pump is 150 mmHg (Venturi) or 250 mmHg (peristaltic).

NOTE: In ParaProg, the duration of reflux (REFLIMIT) can be limited to 2 seconds per activation, and instead of reversing the pumping action, you can opt to effect reflux using inflow from the bottle.

8.2.6 Proportional Override

To override the vacuum limit in pedal position 3, a higher upper limit value of up to 600 mmHg may be entered using the OOC-M button.
To do this, keep the OC-M button depressed in the I/A1, I/A2 or I/A3 program (possible individually) and set the desired upper limit value using the arrow key beneath the vacuum display. This value should be higher than the I/A limit value. If an override value was chosen, then this will be indicated in the I/A function by the OCC-M indicator light. Active override is indicated by flashing of the word “Override” and by an acoustic signal. The override value will remain stored. If the override function is not wanted, reduce the vacuum, using the arrow key whilst the OCC-M button is depressed, until the word “OFF” appears.

8.3 Ultrasonic phaco

The unit is set to phaco mode by actuating one of the buttons PHACO1, PHACO2 or PHACO3. The function selected is shown on the display panel with the corresponding pre-stored values.

8.3.1 Phaco test

The handpiece must be tested before beginning the operation. To do so, fit a filled test chamber to the handpiece and press the TEST button.

Never carry out the TEST procedure whilst the handpiece is in the eye!

NOTE: The test will already have been carried out automatically if PREOP was started from PHACO1, 2 or 3.

Once the test is complete, one of the following messages will appear:

“PHACO TEST OK” (for 2 seconds)
The phaco system is ready for use.

“CONNECT HANDPIECE!”
The handpiece is not connected.

“CHECK HANDPIECE”
The handpiece is faulty or worn out. Repeat the test! If the same message appears, use another handpiece and contact the service centre. By pressing the TEST button again you can acknowledge the message and, if necessary, continue working with the handpiece, but its performance will be below standard.

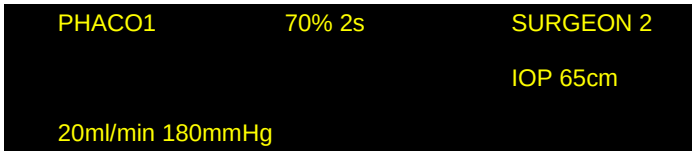
“HANDPIECE DEFECTIVE”
The handpiece is defective, and should no longer be used. Use another handpiece and send the faulty handpiece to the service centre.

“CHECK TIP”
The tip is not properly attached or an Oertli original tip is not being used. Tighten the tip and repeat the test. If the same message appears, use another tip.

NOTE: The phaco test can be aborted by pressing the TEST button. The phaco test can only be started when the pedal is in its zero position.

8.3.2 Phaco operation

Once the test function has been completed successfully, the unit will be in the last selected function: PHACO1, PHACO2 or PHACO3.



The display fields will show the selected function and the corresponding stored limit values for phaco power, flow rate (venturi speed) and suction. These values can be reduced or increased at any time using the arrow buttons. The ranges are 0-100%, 0-50 ml/min or
0-100%VENT and 0-600 mmHg (0-300 mmHg for Venturi). Section 8.1 describes the procedure for storing values.

The surgeon uses the pedal to control the phaco handpiece. The pedal functions are described in Section 4. When the pedal is being used, the current values will be shown in the value display fields. The phaco time display will run for as long as there is phaco operation.

If Phaco LINEAR has been selected in ParaProg, delivery of phaco power is proportional (linear) to the pedal deflection. If Phaco PANEL has been selected in ParaProg, power is delivered in pedal position 3 with the value selected by the arrow keys. The value indicator on the panel blinks.
To quit the PHACO function, you can either press a new function button or the RESET button.

As long as the pedal is being operated (except when it is in position 1), all the buttons – with the exception of the arrow

buttons, PHACO1, PHACO 2, PHACO3, PULSE, IRR, AUX, VOICE and RESET – will remain blocked.

8.3.3 Phaco pulse and phaco burst

The pulse or burst function is switched on and off by pressing the PULSE button or by moving the pedal to the left (if linear phaco with PULSMODE is selected in ParaProg). Changing between pulse and burst is done by repeated pressing of the PULSE button.

Pulse

In the pulse function, phaco output is given in short pulses. The number of pulses per second (**pulse frequency**) can be selected between 0.5 and 40. To do this, press the PULSE button and hold it down while you set the chosen values using the arrow buttons beneath the value display. The pulse frequency as selected by each surgeon remains stored, even when the unit is switched off.

The cooling factor can be specified while keeping the PULSE button from 10% to 99% in 1% increments or in 10% increments.

Burst

In the burst function, phaco output is given in short pulses (bursts). The number of bursts per second is (**frequency**) proportionally controlled by the pedal, from a single burst (0.5Hz) up to continuous power delivery To do this, hold the PULSE button down and set MAX PEDAL accordingly. The phaco power always corresponds to the value selected with the arrow key on the panel (1% to 100%), irrespective of pedal position.

NOTE: If Phaco PANEL has been selected in the ParaProg, only one single burst with the selected values is delivered in pedal position 3. The next burst will be released only after the pedal has been brought back to position 2.

The burst duration

(duration of phaco power delivery) can be selected from 10ms to 500ms. To do this, press the PULSE button and hold it down while you set the chosen value using the arrow buttons beneath the value display. The burst length as selected by each surgeon remains stored, even after the unit is switched off.

NOTE: If PULSMODE was selected in ParaProg (pulse or burst switched on by moving the pedal horizontally), pulse or burst will not be stored as a part of PHACO1, 2 and 3. Otherwise, pulse will also be stored.

8.3.4 CMP Phaco

Press the CMP button to switch the CMP function on and off. In the CMP function phaco power is delivered in short pulses. The pulse frequency and the cooling factor can be selected as desired within the limits set by the machine. To do so hold the CMP button down and select the values with the arrow keys. Independent of the values selected the phaco tip will remain cool, even at 100% phaco power. This allows operations without infusion sleeve. The phaco power is always proportional to the pedal deflection.

Note: CMP1, 2, 3 have their own memories. By holding down the corresponding button phaco 1, 2, 3 (see 8.1) for a short period, all settings will be memorized.

8.3.5 Occlusion Mode Phaco

In occlusion mode, the unit operates until a freely-definable vacuum limit is reached (occlusion vacuum) with the values stored in PHACO1, PHACO2 or PHACO3 (or CMP1, CMP2, CMP3) and above with the values of the respective OCC-M memory. When the occlusion vacuum is reached, the unit switches to the OCC-M values for flow (venturi), phaco output and pulse. Example:

	PHACO1	OCC-M 1
Vacuum	200mmHg a)	150mmHG b)
Flow	15ml/min	25ml/min
Power	70%	50%
Pulse or burst	Off	On

a) Maximum vacuum, is never exceeded
b) Occlusion vacuum. When this has been reached, the unit switches to the OCC-M values.
Must be lower than vacuum a).

Switching on the OCC-M

To switch on and off, press the OCC-M button lightly. The OCC-M is ready when the LED lights up. As soon as the occlusion vacuum is reached in the course of the operation, the LED begins to flash rapidly. The OCC-M values are now active.

Storing the OCC-M values

First store the multimode values for PHACO1, PHACO2 and PHACO 3 (or CMP1, CMP2, CMP3) as described in Section 8.1. Then call up the memory to be programmed.

Fully depress the OCC-M button. The LED will flash slowly. The displays will show the values for the OCC-M.

Using the arrow buttons, firstly set the chosen value for the occlusion vacuum. It must be lower than the vacuum in the respective multimode memory. Higher values will not be accepted.

Next, set the values for flow (venturi speed) and phaco power, and switch PULSE or BURST on or off (not possible in CMP).

Hold down the PHACO 1 (or PHACO2 or PHACO3) button as described in 8.1. When "VALUES SET" appears, fully depress the OCC-M button again. The LED extinguishes.

Repeat the procedure for the other multimode memories (PHACO2, 3 etc.).

NOTE: The OCC-M function can only be switched on and off when the pedal is in the zero position or position 1.

8.3.6 Proportional override for Phaco

To override the vacuum limit value in pedal position 3 through moving to the right, a higher limit value up to 600 mmHG can be inputted using the OOC-M button. First save the multimode values for PHACO1, PHACO2 and PHACO3 (or CMP1, CMP2, CMP3) as described in chapter 8.1.
Then, in the program PHACO1, PHACO2, or PHACO3 (possible individually), press hard on the OCC-M button and change OCCM-SET to OVERRIDE using the arrow button beneath the IOP display. Then, using the arrow button beneath the vacuum display, set the upper limit value. It should be higher than the PHACO limit value. Then end the setting procedure by pressing hard on the OCC-M button. That fact that override is active is indicated by the blinking of the word OVERRIDE and

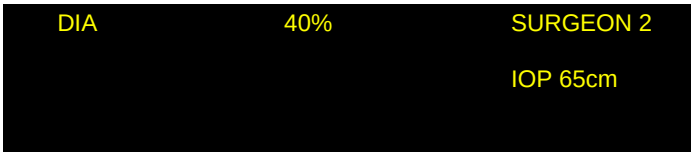
with an acoustic signal. The override value will remain stored. If the override function is not desired, press strongly on the OCC-M button and change OCCM-SET to OVERRIDE using the arrow button beneath the IOP display. Then lower the vacuum value using the arrow button under the vacuum display until OFF appears.

8.3.7 Setting of values for additional aspiration and Phaco power in DUALLINEAR 2 mode

If you have decided for left movement of pedal for DUALLINEAR 2 in ParaProg you can chose either the value for additional aspiration or Phaco power with the OCC-M button. Press the button and hold it until you can select the value for ASP or Phaco dependant on the settings made in ParaProg.

8.4 Diathermy

Press the DIA button.



The chosen function appears in the display fields with the output value last used. The output value can be increased or reduced at any time with the arrow buttons. The range is 0-100%, unless otherwise specified in ParaProg. Two separate limit values for "DiaLimit LOW" and "DiaLimit HIGH" can be programmed in ParaProg.

The surgeon controls the diathermy output by using the pedal. Unless otherwise specified in ParaProg, the following functions are available:

Horizontal movement leftwards: linear control to maximum LOW value
Horizontal movement rightwards: linear control to maximum HIGH value
Vertical movement to position 2: linear control to maximum LOW value.

ParaProg can be used to specify whether linear control to the maximum HIGH value should be possible in position 3, and horizontal control to right and left are switched off separately.

The I/A function cannot be used when the unit is in the Diathermy setting. However, ParaProg can determine whether irrigation should flow in position 1.

To exit the DIA function, you can either press a new function button or the RESET button.

As long as the pedal is being operated, all the buttons – with the exception of the arrow buttons, RESET, AUX, VOICE and PREOP – will remain blocked.

Instant diathermy
By moving the pedal horizontally to the left (while it is in position 0), the diathermy function remains available without having to set the unit to diathermy mode by pressing the DIA button.

This function can be set to DiaLOW or DiaHIGH or switched off in ParaProg.

NOTE: ParaProg can be used to determine whether "Instant Diathermy" should be available in all pedal positions when the unit is in VIT A, VIT B, VIT PN.

8.5 HF CUT

Press the HF cut button.
The chosen HF CUT function appears in the display fields together with the application last used CAPSULE or GLAUCOMA. With the arrow keys you can switch between CAPSULE and GLAUCOMA.

8.5.1 Capsulotomy

Select HF CUT and subsequently CAPSULE: With the arrow keys you can switch between the power ranges REGULAR (recommended) and HIGH (for capsulotomies underneath the iris). Power is controlled by the unit itself and cannot be influenced by the surgeon.

The surgeon actuates capsulotomy operation by using the pedal. Unless otherwise specified in ParaProg, the following controls are available:

Horizontal left movement:
REGULAR output

Horizontal right movement:
HIGH output
Only if HIGH was first selected with the arrow button.

Vertical position 1:
REGULAR output.1)
NOTE: ParaProg can be used to specify whether HIGH output should be available in position 2 and whether horizontal control to the right and left can be switched off separately.
1) Unless HIGH was selected using the arrow button. The setting last used as by each surgeon remains stored, even after the machine is switched off.

As long as the unit remains in CAPS mode, the I/A system cannot be operated. An activated IRR function will be retained however.

To exit CAPS, you can either press a new function button or the RESET button.

As long as the pedal is operated, all buttons – with the exception of the arrow buttons, RESET, AUX, VOICE and PREOP – will remain blocked.

8.5.2 Glaucoma

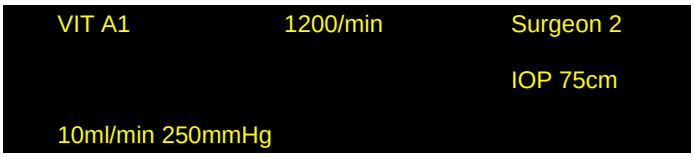
Select HF CUT and subsequently GLAUCOMA. With the arrow keys you can select the intended application IDK or STT. Power is controlled by the unit itself and cannot be influenced by the surgeon. To actuate HF power press the pedal to position 3.
As long as the unit remains in GLAUCOMA mode the I/A system cannot be operated. An activated IRR function remains active.

To exit CLAUCOMA, you can either press a new function key or the RESET key.

As long as the pedal is operated, all buttons – except RESET, AUX, VOICE and PREOP – will remain blocked.

8.6 Vitrectomy

Press one of the buttons VIT A, VIT B or VIT PN.



The display fields indicate the function selected, together with the values last used for cutting rate, flow (Venturi rate) and suction. The arrow buttons can be used to increase or reduce these values at any time.

Unless otherwise specified in ParaProg, the VIT A connection serves to operate an SDS or SUS guillotine vitrectomy stripper, and the VIT B connection the micro-scissors.

The PN connection is for operating the pneumatically-driven Twinac vitrectomy instrument.

NOTE: In ParaProg, VIT A, VIT B and VIT PN can be set up for stripper or scissor operation, according to preference.

Vitrectomy multimodulation programs

Three multimode memories are available for each of the functions VIT A, VIT B, VIT PN. They are identified as VIT A1, VIT A2, etc. on the function display. Switching between these multimode programs is accomplished by repeated depressing of the corresponding function key (VIT A, VIT B, VIT PN) or by swinging the pedal to the right while in position 0 or 1.

NOTE: in ParaProg you can barr these multimode memories or limit to two memories only.

Storing of the values for the vitrectomy multimode programs is done as described in Section 8.1.

TEST function

Press the TEST button to check whether the connected instrument is functioning properly (operation with the set number of cutting movements).

The surgeon controls the vitrectomy procedure by using the pedal. When the pedal is active, the value display fields show the current values. Unless otherwise specified in ParaProg, the following controls are available ("linear vitrectomy"):

Vertical step 1:	Irrigation
Vertical step 2:	Linear aspiration
Vertical step 3:	Linear cutting
Horizontal left:	Instant diathermy (only in position 0)
Horizontal right:	Single cut (stripper VIT A) Close scissors (VIT B)

NOTE: In ParaProg, you can specify the reverse sequence: position 2 cut, position 3 aspiration, and program the horizontal right movement to switch between VIT A1, VIT A2 etc. Instant diathermy can also be made available for operation in positions 2 and 3.

Duallinear vitrectomy

This operating mode enables separate control of the pump by vertical pedal movement and control of the cutting rate by moving the pedal horizontally to the left (or vice versa). It is programmed in ParaProg.

To exit the VIT function, you can either press a new function button or the RESET button.

As long as the pedal is active (positions 2, 3), only the arrow buttons and the RESET, AUX and VOICE buttons will respond.

9 System communication

9.1 Visual displays

Light indicators serve to show selected, programmed and current values and important information about all other unit states on the control panel and remote controller. Warnings and instructions are displayed in the language selected in ParaProg. See also Section 17.

9.2 Acoustic signals

The unit uses acoustic signals to indicate the state of the I/A system and the output values. Different tones represent the various states:

INFUSION OPEN
Sound of a slow drip
ASPIRATION ACTIVE
Sound of a rapid drip, whose pitch rises as the vacuum level increases.
VACUUM LIMIT REACHED
Short beeps
REFLUX (pump reversed)
A high-pitched, rapidly-repeating signal
DIATHERMY ACTIVE
High-pitched sequence of sounds, rising with increased output
HF CUT ACTIVE
Low-pitched sequence of tones (IDK)
Medium-pitched sequence of tones (STT)
High-pitched sequence of tones (CAPSULOTOMY)
PHACO ACTIVE 1)
Repeating combination of three beeps

Volume control
Hold down the AUX button, and select a volume level between 0-100% with the "SOUND" arrow buttons.

NOTE: The CONTIN option can be selected in ParaProg for the acoustic monitoring of the vacuum. The vacuum is then indicated by a wailing tone, which rises as the vacuum value climbs to the set maximum value.
1) If specified in ParaProg

9.3 Voice confirmation

Voice confirmation will notify you about the selected function and values as well as about warnings and instructions. You can set up the scope of voice information for each surgeon in ParaProg, and switch each of the following messages individually to silent:

Warnings and instructions (VOICE MESSG)
Confirmation of selected functions (VOICE MODES)
Confirmation of set values (VOICE VALUES)
Confirmation only of changed values (CHANGE)

In addition, you can specify whether the messages should be given out automatically (VOICE AUTOM) or only when the VOICE button is pressed.

Volume control

Hold down the AUX button and adjust the volume between 0-100% using the "VOICE" arrow buttons.

If the VOICE button is pressed while a voice message is being given out, the transmission stops.

10 Pre-settings using ParaProg

Many important pre-settings can be made in ParaProg. It is best to do so with the assistance of your Oertli consultant while you are being trained in the use of the unit. However, the parameters can also be changed at any time before or after an operation.

ParaProg settings can be entered individually for each surgeon.

As ParaProg variants are dependent on the software installed, a separate **ParaProg User Manual, VV016013E**, has been attached to these operating instructions.

11 Selection of setting values

Every surgeon develops his own preferred operating technique, which also requires corresponding specific setting values for the various stages of the operation.

The OS3 unit can optimally accommodate these individual requirements.

The unit is supplied with the set values used during the last trial or in the internal works test. These values are in no way recommended or suggested values. The correct choice of machine settings is rather the responsibility of the surgeon!

Please also note that settings from another make of operation machine cannot necessarily be transferred to the OS3. The type of instruments used, the irrigation and aspiration tubes and the bottle height will also affect the functioning of the irrigation / aspiration and vacuum modes.

As a general rule, we recommend that you start with lower set values. Our sales consultant will be pleased to advise on the basis of our experience during the trial and induction period.

12 Cleaning and sterilisation regulations

IMPORTANT!

Make sure to adhere to guideline TN999042 (as well as to all of the other relevant requirements that have been made available) when preparing the instruments for re-use!

12.1 Cleaning the Control Device

The device and the control panels should be cleaned at the end of each day of operation. Remove all BSS residue using a soft fiber-free cloth that has been dampened with medicinal benzene. Make sure to keep the control panels and the device dry at all times. They are not to be spayed or rinsed.

12.2 Cleaning the Instruments

Immediately after the operation, immerse the diathermy tips, cutting heads and handpieces in BSS or distilled water and rinse thoroughly. The cleaning instructions supplied with the instruments should be strictly observed!

Only use distilled or de-ionised water, neutral cleaning agents and a soft lint-free cloth or soft sponge. Ensure that all instruments are free from blood, tissue and impurities caused by saline deposits or other substances. Rinse carefully and thoroughly with distilled water, and clean carefully with compressed air. Do not use oxygen or any other gases!

12.3 Sterilisation

IMPORTANT!

Clean diathermy and capsulotomy tips immediately after removal from the eye and keep moist with BSS or distilled water until they can undergo final cleaning.

Steam sterilisation is the recommended method for tips, handpieces, instruments and re-usable cassettes. ETO sterilisation is not recommended, and gamma sterilisation is unacceptable because of the instability of the materials.

IMPORTANT!

The user is responsible for using the correct sterilisation method, including taking any precautions to ensure bacteriological safety.

After cleaning (as described in Section 12.1), tips, handpieces and instruments must be sterilised in the autoclave with a supporting air removal device. The recommended values are: temperature 134°C…138°C, min. cycle time 3 minutes.

When the instruments are removed from the sterilisation system, they must be cooled to room temperature before commencing an operation.

The instruments should be dismantled into their individual parts before being sterilised.

IMPORTANT!

The instruments must be sterilised before every use!

13 Accessories and replacement parts

Unit accessories

VC830200	Vitrex add-on module for vitreo-retinal surgery
VE830001	Unit trolley with infusion bar drive
VE830010	Programmable duallinear pedal
VE830020	Remote controller with illumination
VE830025	Second control panel for base unit
VX520010	3.15 AT fuses, high breaking capacity

Consumable materials

VV630003	Twin Vac cassette, autoclavable (pack of 3)
VV630010	Twin Vac cassette, single use (pack of 10)
VV635010	Venturi cassette with second aspiration port, single use, (pack of 10)
VV630011A	Phaco Pack (pack of 10)

Phaco instruments

VG800011	Ultrasonic phaco handpiece
VV800415	Phaco tip, "Excellerator 2", titanium, 15°
VV800430	Phaco tip, "Excellerator 2", titanium, 30°,
VV800530	Phaco tip, "Ergo Excellerator", titanium, 30° (Kelman)
VV800050	Pars Plana Phaco tip, titanium

Vitrectomy instruments

VE100100	Drive for SDS instruments
VV101301	SDS guillotine cutting head
VV101201	SDS Klöti cutting head
VV101501	SDS micro scissors
VG601151	SDS irrigation sleeve, 1.5 mm
VE103100	Drive for SUS instruments
VV103006	SUS guillotine cutting head, single use, 6 pieces
VV104010	Twinac pneumatic cutter, single use, box of 10
VG601351	SUS and Twinac irrigation sleeve, 1.5mm, reusable.

Diathermy instruments

VE201712	"Plug-on" diathermy handpiece
VE201722	"Plug-on" eraser tip
VE201723	"Plug-on" endo diathermy tip, 0.89 mm
VE201724	"Plug-on" endo diathermy tip, 0.45 mm
VE201726	"Plug-on" capsulotomy tip
VE203902	"Plug-on" bipolar forceps

14 Authorised service centres

Switzerland (manufacturer)
Oertli Instrumente AG
Hafnerwisenstr. 4
CH-9442 Berneck
Tel. +41-71-7474200

Information about other service centres can be obtained from the manufacturer.

Authorised representative in the EU

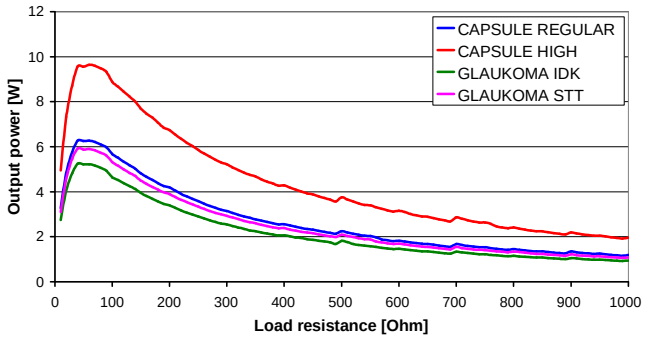
Germany
Oertli Instrumente GmbH
Magnolienweg 14
D-63741 Aschaffenburg

15 Technical data

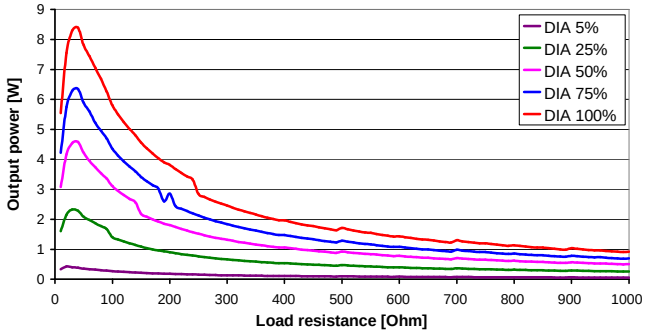
Supply pressure*	Air 6.5…10 bar, max. 40 l/min, NIST EN-739 connection
Mains voltage	100…240 VAC
Mains frequency	50…60 Hz
Power consumption	270 VA (590 VA with Vitrex)
Fuses	3.15 AT, high breaking capacity
Operating mode	continuous
Application parts	non-earthed, type BF (IEC 601), Exception: Phaco type B
Protection class	I
CE classification	2B
HF output power	Phaco: 26....30kHz 28kHz nom. 46W ± 8 W (100%/1000Ω)
Diathermy	500 kHz 0-8 watt, nom. at 50 Ohm
Capsulotomy	automatic energy 500kHz control, regular 6.5W high 9.9W, eff. at 50Ω IDK 5.5W STT 6W at 50 Ω
Vitrectomy	VIT A, B: 30 – 1200/min VIP PN: 1500/min optionally 3000/min
Max. HF output voltage	Diathermy: 60Vss (47Ω/100%) HF CUT: 270Vss (47Ω) Phaco: 550Vss (1100Ω/100%) Vitrectomy: 200Vss (at instrument input)
Aspiration flow	0-50 ml/min ±25%
Vacuum	0-600 mmHG ±10% 0-80kPa ±10%
Noise level	<70 dB (A)
Dimensions	380 x 150 x 340 mm (W/H/D)
Weight	Unit 14.8 kg Pedal 4.8 kg
Transport and storage Conditions	Temperature: -20°C…+55°C Air pressure: 500hPh…1060hPa Relative air humidity: 10%…95%, non condensing
Operating conditions	Temperature:10°C...40°C Air pressure: 700...1060hPa Relative air humidity: 20%....80% non condensing

* If there is no pressure connection, the venturi pump and VIT PN cannot be operated.

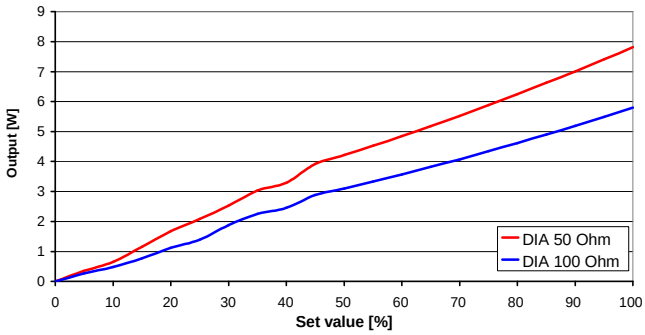
HF-CUT



Diathermy



DIA 50 Ohm and 100 Ohm



16 Overview of messages, warnings and error messages

Select surgeon!
Asks you to select the correct surgeon number

Pressure too low
The pressure at the compressed air connection is too low. Venturi and VIT PN cannot be operated properly. Check mains pressure and replace venturi nozzle filter if necessary (Service Manual)

Connect handpiece!
The phaco handpiece is not connected, or not connected properly.

Defective handpiece!
The handpiece cannot be operated.
See Section 8.3.1

Test handpiece!
The handpiece has a low output.
See chapter 8.3.1.

Insert cassette!
Insert a cassette, or close the cassette door properly.

Empty cassette!
The cassette is completely full. Empty immediately.

No pedal!
The pedal is not connected or not properly connected.

PREOP discontinued!
PREOP was interrupted by pressing pedal with the heel.

Phaco test active
The phaco test is under way and nothing else can be operated.

Phaco test OK
The phaco test has been completed successfully.

Please repeat phaco test!
The test was interrupted and must be repeated.

Phaco Test discontiued!
The test was interrupted by pressing pedal with the heel.

System ready!
The self-test has been completed successfully.

Check tip!
The tip is not properly attached.
See Section 8.3.1

Call Service, Error 1
Contact service (Internal voltages defective)
The unit cannot be used.

Adjust Unit, Error 2
Contact service. (Pressure measurement incorrect)
The unit cannot be used.

Adjust Pedal Error 3
Contact service (The pedal is not properly set)
The unit cannot be used.

Graphic Display Error 4
Call service (ParaProg display is defective)

Program Failure Error 8
Contact service. The unit cannot be used.

NV Ram failure Error 9
Contact service. The unit cannot be used.

Pump Failure Error 10
Contact service (Pump doesn't work).
The unit cannot be used.

Overload Error 11
Loading too high. Wait until the respective switching circuit has cooled down: the message will disappear.

Irr Motor Error 12
Infusion rod has been knocked.
Wait until the message disappears, then lower the rod.

Update Vitrex Error 13
BASIC has a newer SW then VITREX
Call service

Force Sensor Error 15
Forcesensor defective.
Call service

Adjust Venturi Error 16
Impossible venturi sensor calibration values.
Call service.

Adjust Force Sens Error 17
Impossible peristaltic sensor calibration values.
Call service.

Check Venturi Error 18
Venturi System: Vacuum deviation to high.
Call service

Errors 5, 6 and 7 do not appear for this unit

17 Symbols

	Use only mains fuses with the specified value
	Application parts type BF
	Application parts type B
	Read user manual!
	Dangerous electrical current. Do not open unit!
	Footswitch connection
	Earthing pin
	Remote control
	Marking for installation of IV pole (service only)
	The cart with the tray fully stretched out can tip over if inclined more than 6°! The cart must only be moved when the tray is fully folded and stored.

Color coding of machine packs
For ease of identification the following color codes are used in addition to identification numbers and product description. Color codes appear normally on the secondary pack (card board box) only.

	OS3 TwinVac
	Phaco accessories included
	Vitrectomy accessories included

18 Calibration and maintenance

Provided that the cassettes are replaced regularly in accordance with the instructions in the packaging, this unit requires only the following calibration and maintenance:

Yearly calibration:
- Adjustment of pressure sensor as instructed in the service manual.

Yearly maintenance:
- Inspect electrical cables (instrument and mains) for signs of wear and tear, and replace where necessary.

19 Disposal

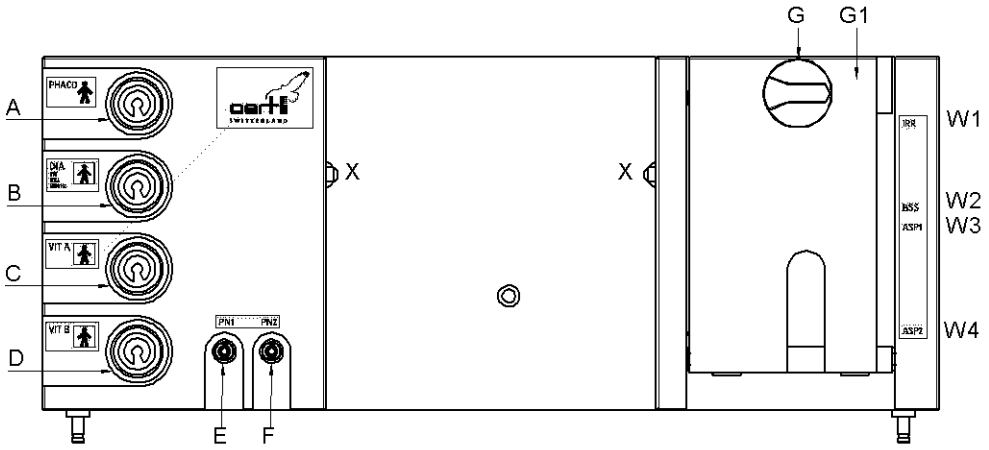
This unit should be disposed of in accordance with local regulations for the disposal of electronic equipment, or it should be returned to the manufacturer for disposal.

Items designed for single use should be disposed of in accordance with local regulations for the disposal of contaminated medical waste.

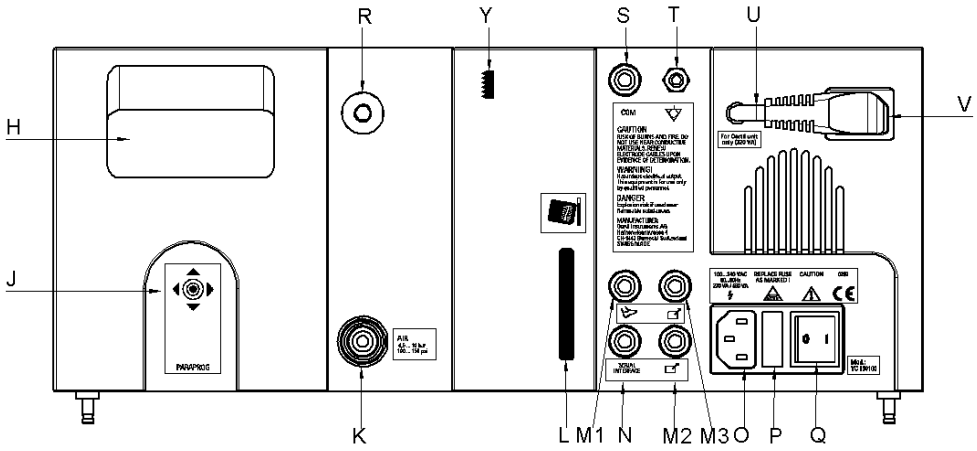
Instruments for repair should be cleaned and sterilised prior to their return to the service centre.

20 OS3 Base Unit, VC830100, Overview

Front, without control panel



Rear



A	Phaco handpiece connection
B	Diathermy/capsulotomy connection
C	Vitrectomy connection, instrument A
D	Vitrectomy connection, instrument B
E	Connection 1 for pneumatically-operated vitrectomy instrument
F	Connection 2 for pneumatically-operated vitrectomy instrument
G	Cassette rotary switch
H	ParaProg screen
J	ParaProg combi-switch
K	Compressed air connection NIST EN 397
L	Slot for smart card (see service manual)
M1	Pedal port
M2	Reserve port
M3	Control panel port
N	Serial interface (see service manual)
O	Mains connection socket
P	Fuse holder
Q	Mains switch
R	Compressed air connection line (see service manual)
S	Connection for data lead to the Vitrex module
T	Earthing pin
U	Interconnecting cable to Vitrex module
V	Park socket for interconnecting cable
W1	Position of irrigation hose
W2	Position of connection for infusion bottle
W3	Position of aspiration hose 1
W4	Position of aspiration hose 2
X	Fixture for insertion of the control panel
Y	Marking for installation of IV pole (service only)